

# Generator of Signals of Reamer in Scan Televisual Microscope

Volodymyr Vasilyuk, Vitaliy Goy, Mykola Nakonechnyi, Andrew Rehush

*Annotation* – the ways of construction of generator of signal in reamer of skan's ray in a televisual microscope are examined on the basis of cathode-ray tube of high discriminability. A generator is provided forming of skan raster with different time parameters, with sizes and displacements which change in wide limits.

*Keywords* – Skan microscope, Involute, Down-scaling of image of microobject.

## I. ENTRY

For providing of wide functional possibilities of skan television optical microscope at research of microobjects, the generator of signal of reamer must provide forming of raster of variables in the wide limits of sizes in any point of cathode-ray tube of high discriminability, which is used in a role of lighter. The analog-digital method of forming signal from one time generator with the quartz stabilizing is offered. Highest possible of discriminability of mouldable raster is  $4096 \times 4096$  elements. Minimum time of forming of one shot of raster – 16 s.

## II. RESHAPER OF SIGNAL OF REAMER

Structural pattern of reshaper of signal of reamer which takes into account all functional possibility of scan microscope is developed. For forming the signal in the television mode the standard processor is applied which is synchronized with basic time generator. For providing the exact and stable forming of different sizes signal of reamer and displacement, it is suggested to form serrated tension of string and skilled reamers by the high-linear generators of relevant serrated tension with the use of operating strengtheners. Synchronization of the modes of operations of serrated tension generators is realized by the impulses of extinguishing, which are used for forming complete video signal. Forming signal reamer in the low-frame-rate mode is realized by a 12-bit digital-analog transformers. The change of discriminability of mouldable raster is realized by presentation of signals from meters on the proper digits of digital-analog transformers. Choice of digital or analog signal of reamer is realized by electron commutator.

Adjusting amplitude of signal in the generator of reamers is realised concurrently on both co-ordinates of rejection by the change of amplitud's chosen of signal of reamers by a digital-analog method.

Range change amplitude of signal is 10 times. Adjusting of displacement of signal of reamer is realised independently on every co-ordinate and provided within the limits of complete amplitude of signal. For defence of transformer a tension-current is foreseen limitation of amplitude of signal at level, which on 5-10% exceeds the level of signal, which answers extreme position of raster on the screen of cathode-ray tube.

Requests are defined to stability of parameters of mouldable signals of reamer taking into account parameters of transformer tension-current from with condition, that the change of ambient temperature on  $5^{\circ}\text{C}$  can change position of raster and his size, which do not exceed 0,001 maximal size of raster. Are seted up possible extrass on the output of digital-analog transformer which forms the signal of reamer, and them possible duration, which do not influence on the modes of operations of transformer tension-current.

Requests are defined to non-linearity of formed signal of reamer in the television mode. Hard terms to linearness are determined by the requirements of determination co-ordinates of the probed microobject. Basic technical parameters of generator of signal of reamer in the low-frame-rate mode are:

- duration of forming one display element at the discrete method of forming of raster is – 1 mks, 2 mks, 4 mks, 8 mks, 16 mks;
- a period of skilled reamer at the discrete method of forming of raster is – 1 s, 2 s, 4 s, 8 s, 16 s;
- a maximal amount of curriculum of image elements at the discrete forming of skan raster is –  $4096 \times 4096$ ;
- the least of curriculum of image elements at the discrete forming of skan raster is –  $512 \times 512$ .

## III. CONCLUSIONS

The offered generator of signal provides:

- it is forming of full forming raster in the chosen mode of operations of microscope;
- it is forming of raster of the diminished sizes in the chosen mode of operations of microscope;
- it is displacement of diminished raster in the arbitrary point of screen of projection tube, that allows to probe the fragments of MO in a megascopic scale without the loss of discriminability.

---

Volodymyr Vasilyuk, Vitaliy Goy, Mykola Nakonechnyi, Andrew Rehush, – Polytechnic National University, S. Bandery Str., 12, Lviv, 79013, UKRAINE,  
E-mail: shkliarskyi @ polynet. lviv.ua